

Dispatch Operations and Control for Autonomous Fleets, Phase I

Completed Technology Project (2018 - 2019)



Project Introduction

Robust Analytics proposes a suite of near-term technologies that can support managing multiple autonomous or semi-autonomous aircraft including Unmanned Aerial Systems (UAS) and Urban Air Mobility (UAM) vehicles simultaneously. Our approach builds off the existing knowledge base of airline operations, leveraging emerging technologies that enable autonomous flight.

Our approach enables monitoring of vehicles systems and data, coupled with auto-upload of dynamic flight data required to support safe and efficient flight operation (e.g., change in flight plan, evolutionary new destinations, etc.). We build on our expertise in airline dispatch and software applications for air-ground integration.

Our system adds to existing tools and software, providing an evolutionary pathway for the monitoring and control of multiple semi-autonomous and autonomous flights by a single operator. We propose and develop new functionality to accelerate this transition. Our vision aims to extend and enhance our current expertise to transition the functions of today's airline dispatchers to future airspace and vehicle concepts.

Anticipated Benefits

Our research will support several NASA projects and milestones. For urban air mobility, we define the ground-based capabilities they require and offer NASA a technology solution to air-ground integration to support monitoring and control. Our prototype would be available to support UAM demonstrations during a Phase II period of performance. For system wide safety, we offer a design and prototype that could support a safe transition to autonomous operations.

In the near term, our research will benefit the developers and future operators of new urban air mobility and package delivery services as all of them need to implement a ground-based, dispatch operational control system such as we propose. Our Phase I supports early deployment of those new services by defining the ground-based capabilities they require and by offering a technology solution to air-ground integration to support monitoring and control.



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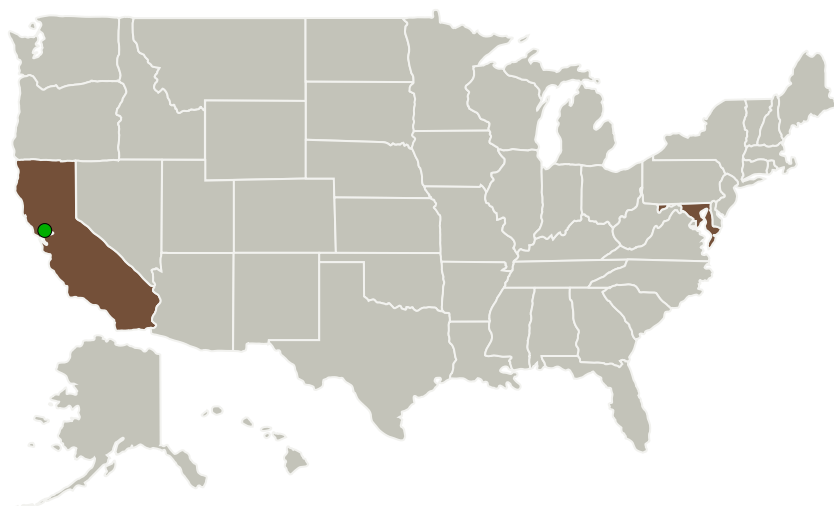
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Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|-------------------------------|-------------------------|--|---------------------------|
| Robust Analytics | Lead Organization | Industry Women-Owned Small Business (WOSB) | Crofton, Maryland |
| ● Ames Research Center(ARC) | Supporting Organization | NASA Center | Moffett Field, California |

Primary U.S. Work Locations

| | |
|------------|----------|
| California | Maryland |
|------------|----------|

Project Transitions

**July 2018:** Project Start**February 2019:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/141016>)

TechPort

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<https://techport.nasa.gov/view/94560>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Robust Analytics

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Peter F Kostiuk

Co-Investigator:

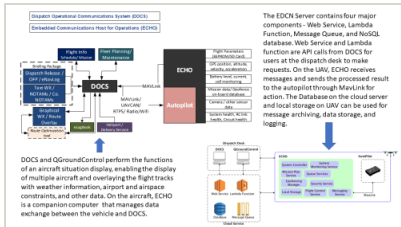
Shreyas Subramanian

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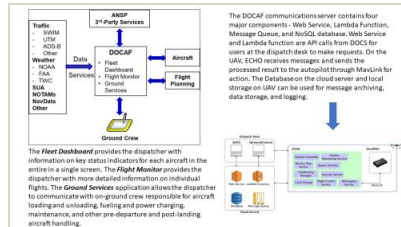


Images



Briefing Chart Image

Dispatch Operations and Control for Autonomous Fleets, Phase I
(<https://techport.nasa.gov/image/133162>)

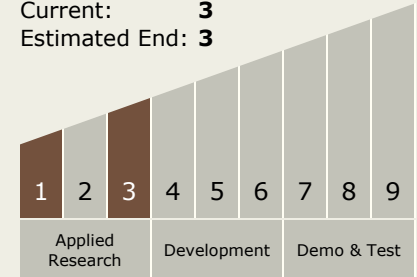


Final Summary Chart Image

Dispatch Operations and Control for Autonomous Fleets, Phase I
(<https://techport.nasa.gov/image/135566>)

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX01 Propulsion Systems
 - TX01.3 Aero Propulsion
 - TX01.3.1 Integrated Systems and Ancillary Technologies

Target Destination

Earth